

Disordered Eating Among Female Adolescents: Prevalence, Risk Factors, and Consequences

Karen Y. Bryla

Abstract

Disordered eating among American adolescent females represents a significant health issue in our current cultural climate. Disordered eating receives insufficient attention, however, due to the public's unfamiliarity with symptoms and consequences, absence of treatment options, and unreliable instrumentation to detect disordered eating. Disordered eating differs from an eating disorder. While the term "eating disorder" denotes a clinically diagnosable disease, the term "disordered eating" refers to a pattern of eating that can lead to an eating disorder. Young females who engage in disordered eating face several times greater risk than their non-disordered eating counterparts to develop an eating disorder; therefore, understanding the prevalence, risk factors, and consequences associated with disordered eating proves necessary for developing effective prevention programs. Factors associated with the prevalence of disordered eating include age, weight, ethnicity, and socioeconomic status. Consequences of disordered eating include nutritional deficiencies, growth retardation, decreased metabolism, and susceptibility to binge eating behaviors. Disordered eating appears related to other health-compromising behaviors such as drug and alcohol use, suicide attempts, and unprotected sexual activity. Family, peers, and media also play significant roles in the development of disordered eating. This review explores these factors and offers suggestions for developing effective intervention programs for disordered eating.

Introduction

Disordered eating by American females represents a common, yet often overlooked, practice in our current cultural climate. The terms "disordered eating" and "eating disorders," while often used synonymously within the literature, require separate definitions. A clinically diagnosable disease whose treatment requires medical intervention, an eating disorder involves serious disturbances in eating behavior. These disturbances may include extreme reduction of food intake, severe overeating, feelings of distress, or extreme concern about

body weight or shape (National Institute of Mental Health, 2001). Anorexia nervosa, bulimia nervosa, and binge eating disorder comprise the three formally recognized eating disorders.

"Disordered eating," while not a clinical diagnosis, involves a pattern of eating that can lead to an eating disorder. Signs of disordered eating include: a) eating though one is not hungry, b) not eating though one is hungry, c) skipping meals, d) eating too little or too much at one time, e) avoiding certain foods or categories of food, then eating large quantities of these foods, f) hiding eating from others, g) feeling guilty after eating, and h) excessive preoccupation with food and weight (American Dietetic Association 1997; Baker, 2002). The term disordered eating, as used in the literature, describes dieting and unhealthy weight loss behavior. Unless otherwise indicated, this review uses the term "disordered eating" to describe dieting and unhealthy weight loss behaviors.

Several factors help explain the lack of attention given to disordered eating. Because eating disorders are often reported in a clinical setting, health professionals better understand the prevalence of eating disorders than disordered eating. The inability to accurately assess the prevalence of disordered eating results from a lack of easily reportable symptoms and absence of treatment options. The sensitive nature of disordered eating precludes the likelihood of self-report, and a lack of reliable and valid measurement instruments results in erroneous detection of disordered eating. In addition, many females and health professionals often remain unaware of the symptoms and dangers associated with disordered eating. Collectively, these factors create a culture of silence regarding disordered eating.

Disordered eating and eating disorders usually develop during adolescence and young adulthood. Females who engage in disordered eating by age 15 face eight times the risk of their non-disordered eating counterparts of developing an eating disorder (French & Jeffery, 1994; Grigg, Bowman, & Redman, 1996; Neumark-Sztainer & Hannan, 2000). In conjunction with behavioral, social, psychological, and environmental risk factors such as gender, socioeconomic status, personality factors, and family environmental factors, disordered eating can lead to development of eating disorders. Disordered eating and eating disorders can only be prevented within a framework of accurate and current information; therefore, this review addresses the prevalence, health consequences, and associated risk factors of disordered eating among adolescent females.

Karen Y. Bryla, MA, RD; Kinesiology and Health Promotion,
University of Kentucky, 1550 Trent Boulevard #1310,
Lexington, KY 40515; Telephone: 859-312-2159; E-mail:
kybryl2@uky.edu; Chapter: Alpha Lambda

Prevalence of Disordered Eating

Using data from a cross-sectional school-based survey, Neumark-Sztainer and Hannan (2000) measured dieting and disordered eating (defined only as binge-purge behaviors) among 6,728 adolescents in grades 5 to 12. Almost half of the females (45.4%) reported having dieted. Reasons for dieting included: a) to look better (88.5%), b) to improve health (17.6%), c) parent's suggestion to diet (14.5%), d) physician's or nurse's suggestion to diet (7.1%), and e) coach's or sport instructor's suggestion to diet (3.9%). Disordered eating was reported by 13.4%, with 8.9% reporting engaging in binge-purge behavior at least once a day.

In a similar study, Neumark-Sztainer, Story, Falkner, Beuhring, and Resnick (1999) analyzed data from a statewide survey, administered to a sample of 7th, 9th, and 11th grade public school students from Connecticut ($n=9,118$). The practice of disordered eating behaviors during the previous week was reported by 7.4% of the females. Specific weight loss behaviors included: a) exercise (61%), b) dieting (38.2%), c) vomiting (4.1%), d) use of diet pills (3.8%), and e) use of laxatives or diuretics (1.4%).

Serdula, Collins, Williamson, Anda, Pamuk, and Byers (1993) examined data from the Youth Risk Behavior Surveillance Survey administered to high school students ($n=11,467$) from 38 states. Forty-four percent of females were currently attempting to lose weight, and 26% were trying to keep from gaining weight. Students reported the following methods to lose or maintain weight in the seven days preceding the survey: a) exercising (51%), b) skipping meals (49%), c) using diet pills (4%), and vomiting (3%). The percentage of females who reported ever having used these methods was much higher with 80% exercising, 21% using diet pills, and 14% vomiting.

Prevalence Related to Demographic and Individual Characteristics

Research indicates that age, weight status, ethnicity, and socioeconomic status (SES) relate to disordered eating. Younger girls (grades 5 to 8) are significantly less likely to engage in dieting and disordered eating than older females (grades 9 to 12) (Neumark-Sztainer & Hannan, 2000). Similarly, Neumark-Sztainer et al. (1999) found that older females (11th grade) were more likely to engage in dieting and disordered eating behaviors and less likely to report exercise for weight control than younger girls (seventh grade). The largest jump in reported dieting and disordered eating occurred between eighth graders (39.5%) and ninth graders (52.7%), which may indicate an ideal time to deliver disordered eating prevention programs to adolescent females.

In contrast, Serdula et al. (1993) reported that attempts to lose weight and the use of specific weight loss methods did not vary consistently by grade level. Leon, Fulkerson, Perry, Keel, and Kump (1999) suggest that, as physical

maturity becomes less variable across individuals in their later junior high and high school years, more complex influences override the early association between pubertal development and disordered eating. Investigations have shown that over a 2-year period, the relationship between age of menarche and disordered eating disappears. Contrary to popular belief, results from longitudinal studies indicate that the transition to college does not significantly increase the severity of disordered eating patterns (Leon, et al., 1999). Because disordered eating patterns become entrenched before high school, disordered eating prevention efforts should focus on younger females.

Although being overweight, as measured by body mass index (BMI), relates strongly and positively with dieting and disordered eating, dieting is also prevalent among nonoverweight girls (Neumark-Sztainer & Hannan, 2000). Additional research shows that 54% of overweight females and 32% of normal-weight females diet to lose weight (French and Jeffery, 1994). Females in the middle BMI ranges appear not to differ from underweight girls regarding their risk for disordered eating behaviors. This illustrates the importance of screening all females, regardless of weight status, for disordered eating behaviors and educating them about the accompanying symptoms and consequences.

The prevalence of disordered eating appears highest among White non-Hispanic females and lowest among Black non-Hispanic females (Neumark-Sztainer & Hannan, 2000). Black non-Hispanic females are significantly less likely to diet than are non-Hispanic females (Neumark-Sztainer, et al. 1999; Neumark-Sztainer & Hannan, 2000). African American females demonstrate significantly lower levels of dieting, exercise, and disordered eating compared to Caucasian girls (Neumark-Sztainer, et al. 1999). In addition, Hispanic females and females from other or multiethnic backgrounds are less likely to report dieting and exercise behaviors compared to Caucasian females (French & Jeffery, 1994).

The prevalence of dieting and disordered eating does not appear to differ significantly between socioeconomic levels, though rates tended to be lower among females with higher SES (Neumark-Sztainer & Hannan, 2000). Similarly, Neumark-Sztainer et al. (1999) found that low SES females, compared to high SES females, are more likely to report disordered eating behaviors and are less likely to report exercise. These findings are interesting because most of the research regarding dieting and disordered eating among adult women demonstrates increased prevalence among higher socioeconomic groups (French & Jeffery, 1994). Perhaps SES and age interact in unique ways to produce varying trends among these groups.

Consequences of Disordered Eating

In addition to increased risk for developing an eating disorder, disordered eating also can result in other frequently reported consequences including physical and psychological symptoms, poorer eating habits and nutritional

intake, difficulties in future weight loss and maintenance as a result of weight cycling, and increased binge eating following restrained eating (Neumark-Sztainer, 1995).

Adolescent females who engage in disordered eating may develop calcium and iron deficiencies, a dangerous possibility during this period of rapid body growth. Females often avoid dairy foods, which are high in calcium, because they believe these foods are high in fat content. Females often avoid eating meat, which is high in iron, for a similar reason. Low intake of calcium during adolescence, a critical period of mineralization for the skeleton, may play a role in later development of osteoporosis. Iron, the nutrient most likely lacking in adolescent females' diets, becomes especially deficient for those dieting to lose weight (Neumark-Sztainer, 1995).

An Australian study (Grigg, et al. 1996) demonstrated that 10 to 20% of females who engaged in unhealthy weight reduction practices restricted nutrient and energy intakes. These practices included: a) cutting out all meats, all dairy foods, or all starchy foods, and not compensating with a balanced diet, b) fad dieting, and c) using special dietary aids and/or meal replacement products. However, some evidence suggests adolescents equate "dieting" with healthy eating behaviors such as increased fruit and vegetable consumption (Neumark-Sztainer, et al. 1999). While many adolescents often describe dieting as "skipping meals and starvation," some identify more healthful dieting behaviors, such as increased fruit and vegetable consumption and lower fat intake, which may produce beneficial effects on adolescents' overall health.

Growth retardation represents another consequence to females who engage in dieting at an early age (French & Jeffery, 1994; Grigg, et al. 1996). Among 201 children treated through a pediatric endocrinology unit for short stature and/or delayed growth, 14 (7%) fit a pattern of growth failure due to malnutrition. The malnutrition resulted from a self-imposed restriction of caloric intake arising from fear of becoming overweight (Neumark-Sztainer, 1995).

Concerns recently have emerged about the effects of intermittent, or "yo-yo," dieting on metabolic efficiency (French & Jeffery, 1994; Neumark-Sztainer, 1995). Metabolic efficiency may be enhanced by repeated cycles of weight loss and weight gain, which means the body stores more energy with less energy intake. Because an individual's metabolism becomes more efficient through "yo-yo" dieting, they may need to consume fewer calories over time to maintain the same body weight. This metabolic consequence holds particular relevance for adolescents who may be initiating a lifetime of dieting (Neumark-Sztainer, 1995).

Dieting may increase susceptibility to binge eating behaviors. If food intake is severely restricted through dieting, an individual may readily react to disinhibitors or precipitants, such as the availability of tempting foods or low mood status, which prompt them to binge. Non-dieters demonstrate more resistance to bingeing, and they maintain more consistent eating patterns (Neumark-Sztainer, 1995).

Researchers have identified additional physical and psychological consequences of disordered eating. In one study (Neumark-Sztainer, 1995), approximately 30% of dieters reported at least three of the following symptoms in connection with weight loss attempts: a) fatigue, b) anxiety, c) depression, d) anxiety associated with meals, e) increased interest in food and food preparation, f) chilliness, g) constipation, h) amenorrhea for at least three months, i) mental sluggishness, j) impaired academic performance, and k) decreased zest and interest in areas that previously interested them.

Associated Risk Factors

Psychosocial and Behavioral Influences

French, Story, Downes, Resnick, and Blum (1995) studied the psychosocial and health behavior correlates of adolescent dieters using survey data from Minnesota public school students in grades 7 to 12 ($n=33,393$). Weekly or daily alcohol or tobacco use was 1.5 times more prevalent among those who always dieted compared to those who never dieted. The prevalence of suicide risk, sexual intercourse, and physical or sexual abuse was positively associated with higher frequency of dieting. Dieting was inversely associated with family connectedness, while dieting was positively associated with peer acceptance concerns, emotional stress, family stress, and delinquent behaviors. Analyzing data from the 1993 Youth Risk Behavior Survey, Neumark-Sztainer, Story, Dixon, and Murray (1998) found similar results among females in grades 9 to 12. Findings suggest an overall pattern in which adolescents engaging in extreme weight control behaviors were at increased risk for other health-compromising behaviors such as tobacco, alcohol, and marijuana use; suicide ideation and attempts; and unprotected sexual activity.

French et al. (1995) hypothesize that dieters may engage in high-risk behavior to establish connection with and gain approval from peers, such as dieting to achieve a thin ideal body shape; early sexual intercourse; or alcohol, tobacco, and drug use. In addition, low levels of family connectedness or a family environment in which physical or sexual abuse occurs may create a lack of family social support, which youth then seek in peer groups. Females with eating problems often perceive their families as more in conflict and less cohesive or warm (Byely, Archibald, Grager, & Brooks-Gunn, 2000). This lack of social support and feelings of disconnectedness also may explain increased suicide risk among dieters. Dieters may engage in high-risk behavior to reduce negative feelings about themselves and their family and peers. On the contrary, coexistence of deleterious health behaviors and eating problems may reflect a general pattern of unhealthy behaviors, rather than a causal relationship (Leon, et al. 1999). Regardless, evidence demonstrates that disordered eating behaviors occur in a broader social context of adolescent health and risk-taking behavior that

professionals should consider when developing interventions.

Personality, temperament, and behavioral factors may predict disordered eating behaviors. Leon et al. (1999) collected data from 726 Minnesota females in grades 7 to 10 using questionnaires, interviews, and weight/height measurements. Negative affect and attitude was a significant predictor of disordered eating. These results are congruent with previous findings showing negative emotionality and poor awareness of body stimuli as significant predictors of disordered eating among females (Leon, et al. 1999). The authors theorized that psychopathological vulnerability to disordered eating may be formulated by high stress reactivity and negative mood coupled with difficulties in labeling emotional arousal. French and Jeffery (1994) report that dieters on weight loss diets--compared to dieters on non-weight loss diets--made more negative, internal, self-blaming attributions for their dietary failures. Summarily, this evidence suggests disordered eating interventions should include adaptive ways of dealing with negative mood.

Family and Peer Influences

In a prospective study of 6,770 females aged 9 to 14 (Field, Camargo, Taylor, Berkey, Roberts, & Colditz, 2001), females who reported parental pressure to be thin were twice as likely to become highly concerned with weight. Girls who reported pressure from their father to be thin were more likely than their peers to become constant dieters. The perception that mothers valued thinness was unrelated to dieting. Similarly, Byely et al. (2000) found that mothers' dieting behavior and body image failed to predict females' dieting and body image, concurrently or longitudinally. These results are surprising in light of the popular belief that girls model their mothers' eating attitudes and behaviors (Byely, et al.). In support of this popularized theory, Vincent and McCabe (2000) found that maternal encouragement to lose weight was a predictor of dietary restraint, use of dieting and exercise to lose weight, and bulimic symptoms. Negative commentary about body weight or shape by fathers was a predictor of extreme weight loss behaviors. These relationships remain unclear in the literature due to variations in measurement instruments, study designs, and age of samples (Byely, et al.).

Inconsistent evidence also exists regarding peer influence. Field et al. (2001) reported that peer influences did not predict future weight concerns; however, Vincent and McCabe (2000) found that peer influences through discussions related significantly to poor body image, eating restraint, use of dieting and exercise for weight loss, bulimic symptoms, and binge eating behavior. Interestingly, peer modeling of weight loss was not related to dieting behaviors.

Vincent and McCabe (2000) found that the direct influence of family and peers, rather than the quality of these relationships, predicted disordered eating. This finding conflicts with evidence that dysfunctional family functioning

is associated with eating problems. In addition, discussion about weight loss was one of the most consistent predictors of eating problems in adolescent females, as reported by Vincent and McCabe (2000). This finding coincides with numerous other studies that indicate females regularly engage in discussions about weight loss with their mothers and friends.

Media Influence

Influence of media on adolescent females' eating behavior remains a topic of debate. Research suggests media exposure does not cause, but reinforces, an unhealthy body image among vulnerable women, which can lead to disordered eating. Internalization of sociocultural ideals appears to be a larger contributor to body dissatisfaction than mere exposure to media images (Sherwood & Neumark-Sztainer, 2001). Individuals are uniquely affected by sociocultural ideals of thinness depending on the degree to which they internalize these images and believe they should emulate these images. In a study of 234 Girl Scouts (mean age = 10), Neumark-Sztainer, Sherwood, Collier, and Hannan (2000) found that one of the strongest correlates of dieting was internalization of the sociocultural ideal.

Though media portraying thin ideals often are blamed for the development of disordered eating, exposure to fat-character television content represents a significant predictor of eating disorder symptomology (Harrison, 2000; Harrison & Cantor, 1997). Because fat characters often are depicted in negative ways, this fact may serve as a motivator for young females not to become fat. While thin-ideal television does not seem to affect disordered eating, exposure to thin-ideal magazine content correlates positively with both increased anorexia and bulimia among females (Harrison, 2000). Similarly, Harrison and Cantor (1997) determined the relationship between exposure to mass media and women's eating disorder symptomology to be stronger for magazine reading than for television viewing. General findings by Field et al. (2001) show that making considerable effort to look like female figures in the media predicts future weight concerns and chronic dieting.

Disordered eating and eating disorders are complex physical and social problems; therefore, their relationship with media exposure is probably bidirectional. Media users are affected by what they view, but they also expose themselves selectively to media content congruent with their existing worldview. In other words, thin-ideal media may promote perpetuation of eating disorders partly because people with disordered eating or eating disorders seek them (Harrison, 2000).

Conclusion and Recommendations

Disordered eating receives inadequate attention by health professionals and the general public, though disordered eating predicts future eating disorders. This review explored the prevalence, consequences, and risk

factors associated with disordered eating among adolescent females to generate suggestions for effective prevention programs.

The transition from middle school to high school offers an appropriate time to deliver disordered eating prevention programs because disordered eating patterns appear to become entrenched before high school. When delivering prevention programs, normal and underweight females of various ethnic groups should be included. Disordered eating prevention programs should also educate adolescent females about the dangers of disordered eating, which may serve as a deterrent for some females. Because disordered eating occurs in a broader social context, disordered eating prevention efforts should address associated health behaviors such as drug and alcohol use, suicide ideation, and sexual activity. Attempts to change at least one of these behaviors may result in improved overall health behavior.

The evidence suggests that disordered eating prevention programs should include instruction on how to manage stress, mood fluctuations, and personal failures. In addition, disordered eating prevention programs can use communication skill-building activities that help adolescent females handle eating and weight-related discussions with their family and peers. These programs should educate parents on how to talk with their children about healthful eating and body image. Media literacy should also be a component of disordered eating prevention programs to help adolescent females process and understand the images to which they are constantly exposed.

References

- American Dietetic Association. (1997). *Disordered eating and eating disorders* (Rev. ed.) [Brochure]. Chicago, IL: Author.
- Baker, S. (2002). *Eating disorders: What? Why?* [Brochure]. Santa Cruz, CA: ETR Associates.
- Byely, L., Archibald, A. B., Graber, J., & Brooks-Gunn, J. (2000). A prospective study of familial and social influences on girls' body image and dieting. *International Journal of Eating Disorders*, 28, 155-164.
- Field, A. E., Camargo, C. A., Taylor, B., Berkey, C. S., Roberts, S. B., & Colditz, G. A. (2001). Peer, parent, and media influences on the development of weight concerns and frequent dieting among preadolescent girls and boys. *Pediatrics*, 107(1), 54-60.
- French, S. A. & Jeffery, R. W. (1994). Consequences of dieting to lose weight: Effects on physical and mental health. *Health Psychology*, 13(3), 195-212.
- French, S. A., Story, M., Downes, B., Resnick, M. D., & Blum, R. W. (1995). Frequent dieting among adolescents: Psychosocial and health behavior correlates. *American Journal of Public Health*, 85(5), 695-701.
- Grigg, M., Bowman, J., & Redman, S. (1996). Disordered eating and unhealthy weight reduction practices among adolescent females. *Preventive Medicine*, 25, 748-756.
- Harrison, K. (2000, Summer). The body electric: Thin-ideal media and eating disorders in adolescents. *Journal of Communication*, 119-143.
- Harrison, K. & Cantor, J. (1997). The relationship between media consumption and eating disorders. *Journal of Communication*, 47(1), 40-64.
- Leon, G. R., Fulkerson, J. A., Perry, C. L., Kccl, P. K., & Klump, K. L. (1999). Three to four year prospective evaluation of personality and behavioral risk factors for later disordered eating in adolescent girls and boys. *Journal of Youth and Adolescence*, 28(2), 181-196.
- National Institute of Mental Health. (2001). *Eating disorders: Facts about eating disorders and the search for solutions* [Brochure]. Bethesda, MD: Author.
- Neumark-Sztainer, D. (1995). Excessive weight preoccupation: Normative but not harmless. *Nutrition Today*, 30(2), 68-73.
- Neumark-Sztainer, D., Story, M., Dixon, L. B., & Murray, D. M. (1998). Adolescents engaging in unhealthy weight control behaviors: Are they at risk for other health-compromising behaviors? *American Journal of Public Health*, 88(6), 952-955.
- Neumark-Sztainer, D., Story, M., Falkner, N. H., Beuhring, T., & Resnick, M. D. (1999). Sociodemographic and personal characteristics of adolescents engaged in weight loss and weight/muscle gain behaviors: Who is doing what? *Preventive Medicine*, 28, 40-50.
- Neumark-Sztainer, D. & Hannan, P. J. (2000). Weight-related behaviors among adolescent girls and boys: Results from a national survey. *Archives of Pediatric and Adolescent Medicine*, 154, 569-577.
- Neumark-Sztainer, D., Sherwood, N. E., Collier, T., & Hannan, P. J. (2000). Primary prevention of disordered eating among preadolescent girls: Feasibility and short-term effect of a community-based intervention. *Journal of the American Dietetic Association*, 100(12), 1466-1473.
- Serdula, M. K., Collins, M. E., Williamson, D. F., Anda, R. F., Pamuk, E., & Byers, T. E. (1993). Weight control practices of U.S. adolescents and adults. *Annals of Internal Medicine*, 119(7), 667-671.
- Sherwood, N. E. & Neumark-Sztainer, D. (2001). Internalization of the sociocultural ideal: Weight-related attitudes and dieting behaviors among young adolescent girls. *American Journal of Health Promotion*, 15(4), 228-231.
- Vincent, M. A. & McCabe, M. P. (2000). Gender differences among adolescents in family, and peer influences on body dissatisfaction, weight loss, and binge eating behaviors. *Journal of Youth and Adolescence*, 29(2), 205-221.